

REMARKS

In the Office Action the Examiner objected to claim 33 for having an informality, rejected claim 34 under 35 U.S.C. 112, second paragraph, as being indefinite, rejected claims 1-7, 9, 19, 21-24, 26-27, 32-34, 36-37, 40-42, and 45-46 under 35 U.S.C. 102 as being anticipated, and rejected claims 8, 10-18, 20, 25, 28-31, 35, 38, 39, 43, 44, and 47 under 35 U.S.C. 103 as being obvious. Claims 1-3, 7-14, 17-28, 30, 31, 34-36, and 42-46, remain in the application.

The objection to claim 33 is moot in light of the cancellation thereof.

The rejection for indefiniteness in claim 34 relates to a claimed "second region." The term "second" has been removed to overcome this rejection.

The rejection for anticipation was based on Oronowitz. Oronowitz teaches doping a silicon substrate with germanium to a quite high concentration. In one embodiment for doping the channel, the preferred concentration is 93 per cent. In the embodiment in which dopes source/drains the concentration "should be at least 70%." Applicants have amended the claims so that now all independent claims to specify that the implant is "at a dose not exceeding 1E17" which is what applicants state is preferable and which will result, as a practical matter, in the range of 1% concentration of germanium. Oronowitz, on the other hand states a preference that is just the opposite; a high concentration that is at least 70%. It is clear that Oronowitz did not contemplate the issue that applicants are addressing and his germanium region would not be desirable for what applicants are seeking. Although Oronowitz actually implants at 2E16, he forms a layer of oxide to increase the germanium concentration greatly. This is achieved by growing the oxide which uses the substrate silicon in the oxide formation and thereby increases the germanium concentration. In effect silicon in the silicon/germanium region is moved out of the silicon/germanium region into the oxide region having the effect of increasing the percentage of germanium in the silicon/germanium region. This explains why Oronowitz puts the gate down after the germanium implant. Oronowitz needs a high concentration of germanium which is achieved by the oxide region which action cannot be performed properly if the gate is present. Although the Examiner in rejecting claim 44 (page 11, last paragraph) took the view that Oronowitz implanted germanium after the gate was formed, it is clear from the drawings and the explanation that the germanium is before the oxide layer and the gate is after the oxide layer. This is a significant disadvantage for Oronowitz because the germanium implant is then not self-aligned to the gate. The consequent alignment issues would make it difficult to keep germanium

out of the channel and would not be symmetrical with respect to the source/drain regions. Applicants' independent claims 1, 36, 44, and 45 all require that the gate be present before the germanium implant.

All of the independent claims now also specify that the silicide is nickel silicide. The Examiner cited Kluth as teaching nickel silicide. Oronowitz does not teach any particular silicide and the possible benefits of nickel silicide do not appear to have been known at the time of Oronowitz. Further there is no suggestion of a solution to the spiking problem of nickel silicide in Kuth.

Accordingly, applicants believe that the independent claims are patentably distinct from the art of record.

In light of the state of the independent claims, a different analysis is required for the dependent claims and applicant considers the rejection of the dependent claims to be obviated.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants believe the application is in condition for allowance which action is respectfully solicited. Please contact the below-signed if there are any issues regarding this communication or otherwise concerning the current application.

Respectfully submitted,

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